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ABSTRACT

Eighteen first grade reading classes in the Bedford-Stuyvesant section of Brooklyn were studied for differences in teacher verbal behavior in various types of reading programs. Nine of the classes were using the Direct Instructional System for Teaching Arithmetic and Reading (DISTAR) and nine of the classes were using the less structured traditional basal approach to teaching reading. The teaching process was analyzed by concentrating on the number of teacher questions and solicitations and their meanings using categories defined by Bellack, Kliebard, Hyman, and Smith. Results showed that DISTAR teachers made twice as many pedagogical moves as those in the basal reading programs and they asked significantly more translation questions while the basal teachers made more reacting types of pedagogical moves. The differences in number of moves were primarily related to the programmed nature of DISTAR, calling for mostly short choral responses from the pupils (sounding out a word or syllable and reading a single word) and using nonverbal cues to get such responses (hand-clapping, pointing, and other hand signals), while basal method teachers verbally requested phrase or longer unit responses. While there are differences between the implementation of the DISTAR program and implementation of the basal reader programs, the differences are probably not as great as critics of the DISTAR system believe. (TJ)

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What Do Reading Teachers Teach in First Grade Classes?: A Study of Questions Teachers Ask

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The problem this study poses is to describe the pedagogical functions and logical meaning involved in the teaching of reading, and to extend the knowledge of teaching style in reading by emphasizing the analysis of cognitive categories of questions involving the symbolic processes of translating and defining.

Background of the Study

A number of researchers have gathered data describing teacher verbal behavior during reading lessons including Guszak (1967), Wolf (1968), Soar (1967), Furst and Amidon (1967), Davidson (1969), Morrison (1968), Perkins (1964), and Medley and Mitzel (1959). As these studies show both differences in teaching style and differences in program have provided avenues of approach to research in the teaching of reading. This study furthers these main avenues by including similar elements and by introducing new dimensions in research in the teaching of reading.

This study investigates the relation of differing reading programs to the substantive-logical dimension of teacher verbal behavior. It investigates the pedagogical function of teacher utterances and the logical meaning of questions asked

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by teachers during reading lessons in First Grade classrooms. The study compares teacher verbal behavior in two reading programs, the direct instruction DISTAR program (Direct Instructional System for Teaching Arithmetic and Reading) and the less structured traditional basal approach. These two types of programs were selected because they represent widely different educational and psychological points of view regarding the teaching of reading.

The students in the two types of programs represent the same general population. That is, the students in the two types of reading programs are drawn from the same general community, the same type of schools, have approximately the same estimated ability, and share common background characteristics. The student groups, then, are equivalent in terms of grade level and neighborhood, even though the study is concerned with teacher variables.

The basal reader programs included in the study were selected because they are similar and widely used in the same urban area in which the DISTAR program is being used. This use within the urban community further assures like pupil populations for the two kinds of programs.

As part of a larger study Bellack and others (1966) detailed the logical operations involved in teaching and developed a category system for analyzing the substantive-logical dimension of teaching. This type of analysis of classroom interaction includes basic skills such as defining,

giving facts and explanations, and evaluating. Questioning based on these logical categories represents a fundamental learning-directing tool of the teacher. A pedagogical function schedule adapted from Bellack is used in this study.

The background and purpose of this study, then, follows the lines of investigation set up by Guszak, Wolf, and Davidson in analyzing the teaching process by concentrating on teacher questions and solicitations as the basic means, given a topic, by which teachers direct learning. It also follows these studies in describing questioning by means of cognitive categories. This study differs from those mentioned in that it emphasizes teacher questions that call for defining (vocabulary) and translating (word and letter recognition and phonics), as opposed to comprehension. This study complements those studies by emphasizing translation and defining.

The hypotheses of the study are:

1. There is no significant difference between teachers in the two reading programs in the use of pedagogical moves.

2. There is no significant difference between teachers in the two reading programs in the use of elements of the defining category of teacher solicitations.

3. There is no significant difference between teachers in the two reading programs in the use of elements of the translating category of teacher solicitations.

Pedagogical Function Schedule

The four Pedagogical Moves are defined and used as in the work of Bellack, Kliebard, Hyman, and Smith (1966). The logi-

cal meaning categories in the Analytical, Empirical, and Evaluative Modes are defined and used as in the work of Bellack with the exception that in the Analytical Mode the Defining categories have been redefined and restructured along the lines suggested by Ennis (1969), and the Translating categories have been added to the Analytical Mode to accomodate processes characteristic of the teaching of reading.[1] The coding schedule for the study appears in Table 1.

Procedures

The data[2] for the study were collected in First Grade classrooms in the Bedford-Stuyvesant section of Brooklyn, New York. It consists of audio tapes of reading lessons of nine DISTAR teachers and nine basal reader teachers. In each case a central ten-minute segment of the reading lesson was selected for coding. The initial data therefore consists of a taped segment of each reading lesson that represents the central portion of that lesson. Each taped segment is coded directly from the tape according to the Pedagogical Function Schedule. In all 180 minutes of taped data are coded. Half of this data comes from DISTAR reading lessons and half from basal reader lessons.

Two coders coded the taped data. Intercoder reliability

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[1]I wish to express my appreciation to Ronald T. Hyman for his help in incorporating reading skills into the coding schedule.

[2]Data for the study were collected as part of a project emanating from the Rutgers University Reading Center.

TABLE 1.

PEDAGOGICAL FUNCTION SCHEDULE

CODE	PEDAGOGICAL MOVES
1	Teacher/Structuring
2	Teacher/Soliciting
3	Teacher/Responding
4	Teacher/Reacting
1-	Pupil/Structuring
2-	Pupil/Soliciting
3-	Pupil/Responding, Individual
(3-)	Pupil/Choral Reading
4-	Pupil/Reacting
	TEACHER/SOLICITING MOVES - LOGICAL MEANING (Substantive-Logical Dimension of Teacher Questions)
	DEFINING
11	Unspecified
12	Synonym or equivalent
13	Examples
14	Classification, characteristic properties
	TRANSLATING (PRINT-SOUND)
15	Name of symbol
16	Sound for symbol or blend
17	Sound cut word or syllable
18	Read single word
19	Read phrase or larger unit
	OTHER
20	All other soliciting moves

was assessed on taped basal and DISTAR lessons both outside the study and within the study. Intercoder reliability varied from 84% to 91% on the major pedagogical moves, and from 81% to 100% on the major categories of teacher solicitation.

The coded data for the individual lessons is grouped and compiled according to type of reading program. The data is analyzed in terms of the average, range, and proportion of tallies in each of the programs, and the data from the DISTAR reading lessons is compared with the data from the basal reader lessons.

Results

The taped data coded from the 180 minutes of reading lesson tapes specified in the study yields 6,617 tallies coded according to the Pedagogical Function Schedule.

Pedagogical Moves

The 90 minutes of tape from DISTAR lessons yields 3,264 moves in all. The 90 minutes of tape from basal reader lessons yields 1,452 moves. The average number of moves during the ten-minute span of the central segment of the reading lessons is 363 in the DISTAR program, and 161 in the basal reader programs. This means that on the average there are 36 moves per minute by teachers and pupils in the DISTAR program, as opposed to 16 moves per minute by teachers and pupils in the basal reader programs. There are more than twice as many teacher and pupil moves in the DISTAR codings (1,824 and 1,440, respectively) as in the basal reader codings (866 and 586,

respectively). Nonetheless, the proportion of moves made by teachers and pupils is about the same in the two programs. (In DISTAR 56% of the moves are made by teachers, and 44% of the moves are made by pupils. In the basal reader programs 60% of the moves are made by teachers, and 40% by pupils. (See Table 2.)

Teacher soliciting moves in the DISTAR codings average almost three times the number of teacher solicitations in the basal reader codings (154 as opposed to 57). However, the proportion of all moves devoted to teacher solicitations in the two programs in similar (43% in DISTAR, 35% in the basal programs). The average number of teacher reacting moves in the two programs is comparable (an average of 44 in the DISTAR program; an average of 36 in the basal reader programs). However, the relative proportion of all moves devoted to teacher reactions is almost twice as high in the basal reader programs as in the DISTAR program. (Teacher reactions are 23% of all moves in the basal programs as opposed to 12% in the DISTAR program.) The amount of teacher structuring and teacher responding is negligible in both programs.

Pupil responding moves in the DISTAR program average more than twice as many as pupil responding moves in the basal reader programs (156 in DISTAR as opposed to 62 in the basal reader programs). However, the proportion of all moves devoted to pupil responses is about the same in the two programs (43% in DISTAR; 39% in the basal reader programs). Individual

TABLE 2.

PEDAGOGICAL MOVES

Speaker	% of All Moves		Average # of Moves	
	DISTAR	BASAL	DISTAR	BASAL
Teacher				
T/Structuring	1.30	1.3	5.	2.
T/Soliciting	43.00	35.0	154.	57.
T/Responding	.03	.4	.1	.7
T/Reacting	12.00	23.0	44.	36.
Subtotal Teacher Moves	56.33%	60.7%	203.	96.
Pupil				
P/Structuring	0.	0.	0.	0.
P/Soliciting	.06	.4	.2	.7
P/Responding	43.00	39.0	156.	62.
Individual	(7.00)	(26.0)	(26.)	(41.)
Choral	(36.00)	(13.0)	(130.)	(21.)
P/Reacting	.90	1.0	3.	2.
Subtotal Pupil Moves	43.96%	40.4%	160.	65.
All Moves	100%	100%	363.	161.

pupil responses are 7% of all moves in the DISTAR program as compared with 26% in the basal reader programs. On the average the number of individual pupil responses is greater in the basal reader programs than in the DISTAR program (an average of 41 individual responses in the basal codings as opposed to 26 in the DISTAR codings). On the other hand pupil choral responses constitute 36% of all moves in the DISTAR program as compared with 13% of all moves in the basal reader programs. The number of pupil structuring moves, pupil soliciting moves, and pupil reacting moves is negligible in both programs.

The Substantive-Logical Dimension of Teacher Questions

Teacher solicitations, moves that elicit a response, direct learning. There are 1,405 teacher questions in the DISTAR codings and 561 in the basal reader codings. Questions that call for defining or recognition of a definition are .3% of all teacher questions in the DISTAR codings, and 2% of all teacher questions in the basal reader codings. Questions that call for translating are 94% of all teacher questions in the DISTAR program, and 59% of all teacher questions in the basal reader programs. There are four times as many translation questions in the DISTAR lessons as in the basal reader lessons (See Table 3).

The category "All Other" questions includes all teacher questions that call for giving facts, explanations, evaluations, and justifications, as well as instructional and procedural questions. This category accounts for 39% of all

TABLE 3.

TEACHER SOLICITATIONS

Category	% Teacher Solicitations		Average Number Teacher Solicitations	
	DISTAR	BASAL	DISTAR	BASAL
Defining				
Unspecified	.2	.4	.3	.3
Synonym or equivalent	0.	1.4	0.	.8
Examples	0.	.2	0.	.1
Classification, characteristic properties	.1	0.	.2	0.
Subtotal Defining	0.3%	2.0%	.5	1.2
Translating				
Name of symbol	0	1	0	1
Sound for symbol or blend	9	10	13	6
Sound out word or syllable	18	3	28	2
Read single word	66	35	101	20
Read phrase or larger unit	1	9	2	5
Subtotal Translating	94%	59%	145	34
Other	6%	39%	9	22
All Teacher Solicitations	100%	100%	154	57

teacher questions in the basal reader codings as opposed to 6% in the DISTAR codings. On the average there are 22 "other" teacher questions in the ten minutes coded from basal reader lessons as opposed to 9 in the DISTAR codings.

There is too little data from teacher questions in the "Defining" categories to make valid comparisons between the programs. Teacher questions in the "Translating" categories account for an average of 145 questions in the coded DISTAR data and an average of 34 questions in the basal reader program data. Questions calling for pupils to read a single word account for 66% of all teacher questions in the DISTAR codings and 35% of all teacher questions in the basal reader codings. Questions that ask pupils to sound out a word or syllable account for 18% of the teacher questions in the DISTAR codings, as opposed to 3% of the teacher questions in the basal reader codings. Teacher questions that ask pupils to sound a single symbol or a blend account for 9% of DISTAR teachers' questions and 10% of the basal reader teachers' questions. Questions that ask pupils to read phrases or larger units account for 1% of the DISTAR teachers' questions and 9% of the basal reader teachers' questions. On the average DISTAR teachers ask pupils to sound single letters or blends twice as often as do the basal reader teachers. They ask pupils to sound out words or syllables fourteen times as often. The DISTAR teachers ask pupils to read single words five times as often as do the basal reader teachers. On the

other hand basal reader teachers ask pupils to read phrases or larger units more than twice as often as do the DISTAR teachers.

Discussion and Conclusions

The first and the third hypothesis of the study are rejected. Significant differences are found in teachers' use of pedagogical moves in the two programs. On the average the pace of the DISTAR lessons is at least twice as fast as that of the basal reader lessons. In three of the five translating categories of teacher questions (Hypothesis Three), significantly more questions, from twice to fourteen times as many, are asked by DISTAR teachers as compared to the basal reader teachers. The Translation categories used significantly more often by DISTAR teachers are Sounding of symbols or blends, Sounding out a word or syllable, and Reading a single word. On the other hand basal reader teachers ask pupils to "Read phrases or larger units" more than twice as often as do the DISTAR teachers.

The second hypothesis of this study is neither upheld nor rejected since the number of defining questions is exceedingly small. Only four of the 18 teachers asked defining questions. Although basal reader teachers asked more defining questions than DISTAR teachers, in all only 15 defining questions were coded.

In interpreting the data it is important to note that the proportion of all moves devoted to Teacher structuring,

Teacher soliciting, Teacher responding, Pupil structuring, Pupil soliciting, Pupil responding, and Pupil reacting in the DISTAR program closely parallels the proportions of these moves in the basal reader programs. The teaching style of the teachers in the two programs is similar. The only exception to this similarity of style is in Teacher reacting. In the basal reader lessons the proportion of all moves devoted to teacher reacting is almost twice the proportion devoted to teacher reacting in the DISTAR lessons. Thus the distribution of moves, as opposed to their absolute numbers, is similar in the two programs.

The Pace

The comparatively rapid pace of verbal interaction in the DISTAR program results from a combination of factors: its programmed format, its content, and its use of nonverbal teacher moves. Specifically, then, 1) DISTAR lessons are programmed. Teachers are provided with a script to follow which includes printed presentation material for use with pupil groups. In addition the program is highly repetitive in terms of content and procedures. For these reasons much of the teachers' presentation can be fairly automatic. While teachers manuals are provided for basal reader teachers, the lessons are not programmed or stylized in a predetermined manner. In contrast, the teachers' implementation of basal reader lessons requires a certain amount of decision making on the teacher's part and allows the teacher to adapt and shape the lesson as

it proceeds. A slower and often less automatic style of presentation is characteristic of the basal reader teachers. The DISTAR teachers develop a rapid, repetitive presentation often rhythmic in style, and touched with humor and enthusiasm. 2) The content of the DISTAR program as revealed by the kinds of questions teachers ask, differs from the content of the basal programs. The DISTAR teachers characteristically call for many very short choral answers to teacher solicitations to sound letters, sound out words, and read single words. In contrast the basal reader teachers ask individual pupils to read phrases and larger units, and to answer "other" kinds of questions as well as asking Translating or Defining questions. The basal reader teachers ask pupils to "read phrases and larger units" and answer "other" types of questions more than twice as often as do the DISTAR teachers. 3) Finally, the way teachers ask questions in DISTAR allows a much faster pace. Many of the solicitations by DISTAR teachers are posed by, or are accompanied by, hand signals. Pointing, clapping, and other hand signals tell pupils which letters, words, or rhymes are to be sounded, how long sounds are to be held, and whether to blend the sounds slowly or to say them fast. In many cases no teacher verbalization at all is necessary to ask a question. The teacher's hand signal tells students how to respond. The lavish use of hand signals together with the emphasis on repetitive-type translation questions allows verbal interaction in DISTAR to proceed much more rapidly than it can in the basal

reader lessons that do not use these devices.

Nearly all the questions DISTAR teachers ask are translation questions (94%). In the lessons in the study, which ranged from DISTAR lesson No. 63 to DISTAR lesson No. 135, teachers concentrate heavily on reading by sounds and reading by words even when reading "take homes." Only one DISTAR teacher and one basal reader teacher asked pupils to read the story or paragraphs of the story silently. While basal reader teachers also ask pupils a large proportion of translation questions (59%) these questions more often ask pupils to read phrases or larger units than do those of the DISTAR teachers.

Basal reader teachers also ask more questions that are neither translating nor defining questions. These are questions about vocabulary words, questions that ask pupils to make sentences, comprehension questions, auditory discrimination questions, and questions intended to arouse interest before story reading, as well as directions such as to turn the page.

The Pedagogical Function Schedule as adapted for this study proved useful in quantifying data about teacher verbal behavior and pedagogical interaction in the reading programs investigated. The logical meaning category system developed for this study provided a useful means of viewing and contrasting the implementation of differing reading programs. While there are great differences between the implementation of the DISTAR program and the implementation of the basal reader pro-

grams, the differences are probably not as great as critics of the DISTAR system (Mayes, 1973) would have us believe. The DISTAR lesson is louder than the basal reader lesson because there are more than twice as many choral responses, and the interaction proceeds at twice the pace. Nonetheless, teachers in the DISTAR program use a proportion of structuring, soliciting, and responding moves similar to that of the teachers in the basal reader programs. Pupils in the DISTAR program use a proportion of structuring, soliciting, responding, and reacting moves similar to that of pupils in the basal reader programs.

The logical meaning categories of the Pedagogical Function Schedule developed in this study offer a way to gather empirical data about, and to contrast teacher implementation of reading programs. Furthermore, this kind of empirical data will prove useful in verifying the model of reading instruction (Harste and Burke, 1976) a teacher espouses.

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